

## Correspondence

Letters should not exceed 400 words and should be typed double spaced (including the references) and be signed by all authors

TO THE EDITOR, *Genitourinary Medicine*

### Penicillinase producing *Neisseria gonorrhoeae* in a hospital in Barcelona, Spain

Sir,

In 1976 the first strains of *Neisseria gonorrhoeae* containing plasmids that encode for TEM-1 type enzymes ( $\beta$  lactamases) similar to those found in *Escherichia coli* and *Haemophilus influenzae* were isolated in west Africa and South East Asia.<sup>1</sup> In a few years these penicillinase producing strains of *N gonorrhoeae* (PPNG) spread from their original locations to Europe and America. They are fully resistant in vivo to benzylpenicillin, ampicillin, and some cephalosporins.

Infections caused by PPNG strains usually appear in poor social environments. Our municipal hospital serves the population around Barcelona's sea port, where prostitution is widespread. It is a charity hospital with 450 beds, and has a drug addiction treatment service.

A retrospective review of *N gonorrhoeae* isolates, with particular attention to  $\beta$  lactamase production, shows a large increase in PPNG strains in our hospital during the past two years. In 1984 the first two PPNG strains, which accounted for 5% of all isolates, were found. In 1985 the prevalence of PPNG was already 20% of all isolates. Culture of the organism and strain identification were performed using standard methods;  $\beta$  lactamase production was detected by the chromogenic cephalosporin (Nitrocephin, Oxoid) and acidimetry (Betatest, Rosco) methods.

TABLE 1 Isolation of gonococci in 1985 according to production of  $\beta$  lactamase and sex of patients

	No of gonococcal isolates:		
	PPNG	Non-PPNG	Total
Men	1	14	15
Women	7	17	24
Neonate		1	1
Total	8	32	40

PPNG = penicillinase producing *Neisseria gonorrhoeae*.

Table I shows gonococcus isolation in 1985 according to sex and  $\beta$  lactamase production. Our risk group was made up of young women aged 16 to 38 (mean 25) years, parenteral drug abusers, and prostitutes

TABLE II Clinical presentation of gonococcal infection in 24 women

	PPNG	Non-PPNG
Pelvic inflammatory disease (PID)	4	11
Normal childbirth	1	1
Inguinal adenitis with secondary syphilis	1	0
PID and perihepatitis	1	0
Vaginitis	0	5

PPNG = penicillinase producing *Neisseria gonorrhoeae*.

(85%). Table II shows clinical presentations in the 24 women patients. Of seven with PPNG infection, four had positive results in serological tests for syphilis (rapid plasma reagin (RPR), fluorescent treponemal antibody (FTA), or both) and one had four concurrent sexually transmitted diseases: syphilis, gonorrhoea, anogenital warts, and pubic pediculosis. All the men had acute urethritis. A neonate born to a drug addict mother had ophthalmia neonatorum caused by *N gonorrhoeae* susceptible to penicillin.

As clinical and microbiological follow up is very difficult in these patients, it has been necessary to change treatment regimens for this risk group.

Yours faithfully,  
T Baró,  
J Garcia,  
C Alía,  
A Garcia

Clinical Microbiology Department,  
Nuestra Señora del Mar Hospital,  
Barcelona, Spain

#### References

1. World Health Organisation. *Neisseria gonorrhoeae* producing penicillinase. *Weekly Epidemiological Record* 1976;53: 293-4.
2. Ashford WA, Golash RC, Hemming UG. Penicillinase producing *Neisseria gonorrhoeae*. *Lancet* 1976;ii:657-8.

3. Matthew M. Plasmid-mediated beta lactamases of Gram negative bacteria: properties and distribution. *J Antimicrob Chemother* 1979;5:349-58.

TO THE EDITOR, *Genitourinary Medicine*

### Infection with penicillinase producing *Neisseria gonorrhoeae* in Catalonia

Sir,

Since their simultaneous description in 1976 by Phillips<sup>1</sup> and Ashford *et al.*,<sup>2</sup> penicillinase producing strains of *Neisseria gonorrhoeae* (PPNG) have been reported worldwide. Epidemiological studies have shown that there are two endemic areas of infection: the far east (Thailand, the Philippines, Korea, and Hong King) and west Africa (Nigeria and Ghana); strains from such areas have, in addition, characteristic plasmid patterns. In Spain the first patient infected with a PPNG strain, a young man who had acquired the disease in Thailand, was observed in 1979.<sup>3</sup> Infections that had been acquired in Spain were later reported but, with the exception of some self limited outbreaks, the percentage of PPNG strains rarely exceeds 5% in our country.<sup>4</sup> Until 1984 PPNG strains accounted for 5-4% of gonococcal isolates found in our hospital, but from then on the incidence of infections with such strains has increased dramatically.

From January 1985 to May 1986 we isolated *N gonorrhoeae* from 89 patients (96 cases, 94 strains). Each patient was

TABLE 1 Characteristics of 89 patients with gonorrhoea

	Total patients with gonorrhoea	Patients with PPNG strains
No of patients	89	25
No of strains	94	26
Age range (mean) (years)	5-63 (27.6)	18-63 (28.5)
Race:		
Black	65	21
White	23	4
Arabic	1	0
Sex (ratio of men: women)	78:11	24:1

PPNG = penicillinase producing strains of *Neisseria gonorrhoeae*.

evaluated clinically, and samples of exudate were obtained for bacteriological examination. Isolation and identification of *N gonorrhoeae* were performed by standard methods;  $\beta$  lactamase activity was detected using the chromogenic cephalosporin (Cefinase, BBL) and acidimetric ( $\beta$  lactamase Detection Papers, Oxoid) methods. The total number of patients with PPNG infection was 25 (27 cases of gonorrhoea, 26 PPNG strains), which represented 26.7% of the total number of gonococcal strains in this study. Table I shows some characteristics of these patients, most of whom were immigrant African workers of low socio-economic status. None of the patients with PPNG infection had acquired it abroad, and none had had sexual intercourse with travellers from outside Spain. The source of infection was prostitutes in 26 instances, but contacts were largely dispersed in Barcelona and neighbouring villages. A high percentage of patients infected with PPNG strains had had previous or concomitant sexually transmitted diseases, but this incidence was similar to that observed in other patients infected with *N gonorrhoeae*. Characterisation of plasmids was undertaken by Dr Palomares, University of Seville on three strains: two strains showed the "Asia" 4.5 megadalton plasmid with the 24.5 megadalton transfer plasmid, and one strain showed the "Africa" 3.2 megadalton  $\beta$  lactamase plasmid without the transfer plasmid.

Treatment with spectinomycin (2 g as a single intramuscular injection), cefmetazole (1 g as a single intramuscular injection), or rosoxacin (300 mg as a single oral dose) was successful in 17 patients (13, three, and one patient respectively). The remaining 10 patients, who had been treated with either spectinomycin or cefmetazole, did not attend for follow up. Postgonococcal urethritis was found in three patients.

As shown in table II, the increasing incidence of infection with PPNG strains in

the past year has necessitated substantial modifications in the treatment of patients with gonorrhoea in the north east of Spain. These data, however, should not be considered as representative of the situation in Catalonia, but may indicate an emerging incidence of PPNG strains among prostitutes.

Yours faithfully,  
 José L Pérez  
 Roser Savall  
 Francesc Valls  
 Ramón Priu  
 Mateu Cabré

Hospital Sant Jaume i Santa Magdalena,  
 Mataró (Barcelona), Spain.

#### References

1. Phillips I. Beta-lactamase producing penicillin-resistant gonococci. *Lancet* 1976;ii:656-7.
2. Ashford WA, Golash RG, Hemming VA. Penicillinase-producing *Neisseria gonorrhoeae*. *Lancet* 1976;ii:657-8.
3. Alomar P, Gil-Sánchez J, Arteaga E. Aislamiento de una cepa productora de beta-lactamasa. In: *Proceedings of VII Congreso Nacional de Microbiología*. Cádiz: Sociedad Española de Microbiología 1979;ii:128.
4. Ministerio Español de Sanidad y Consumo. Infecciones bacterianas de transmisión sexual. *Boletín Microbiológico Semanal* 1986;Issue No 15/86:1-11.

TO THE EDITOR, *Genitourinary Medicine*

#### Treatment of gonorrhoea with ceftriaxone

Sir,  
 Dixon *et al* (*Genitourin Med* 1986;62:78-81) compared ceftriaxone and penicillin for treating uncomplicated gonorrhoea, and commented that ceftriaxone might be a suitable alternative to penicillin where the incidence of infection with penicillinase producing *Neisseria gonorrhoeae* (PPNG) strains is rising. In their study, however, they reported only one case of infection due to a PPNG strain treated with ceftriaxone. We would like to report our experience of treating with ceftriaxone gonococcal infection caused by PPNG.

We compared intramuscular ceftriaxone 250 mg with intramuscular spectinomycin 2 g in treating uncomplicated gonorrhoea in an open, parallel group, randomised study. Of 291 men and 146 women patients who were fully evaluable, 220 were treated with ceftriaxone and 217 with spectinomycin.

After excluding patients who had presumably been reinfected by continued sexual exposure, there were eight treatment failures in patients treated with spectinomycin (cure rate for spectinomycin = 96.3%) and one treatment failure with ceftriaxone (cure rate for ceftriaxone = 99.5%).

Postgonococcal urethritis, defined as finding five or more pus cells/high power field, was detected in 23.2% of patients treated with spectinomycin and 23.9% treated with ceftriaxone.

The incidence of PPNG strains in the study was 6.5% (41 of 629 gonococcal isolates), and the minimum inhibitory concentrations (MICs) of ceftriaxone, cefotaxime, and spectinomycin were available for 29 of these isolates. The table shows the range of MICs for the PPNG isolates using two inocula,  $10^5$  and  $10^3$  colony forming units (cfu).

TABLE Range of minimum inhibitory concentrations (MIC) of three drugs for PPNG strains

	MIC (mg/l) with gonococcal inocula of:	
	$10^3$ cfu	$10^5$ cfu
Ceftriaxone	0.002-0.015	0.002-0.015
Cefotaxime	0.004-0.03	0.008-0.06
Spectinomycin	16	16-32

PPNG = penicillinase producing *Neisseria gonorrhoeae*.  
 cfu = colony forming units.

A single treatment failure, in a patient with a PPNG infection, occurred after treatment with spectinomycin.

The results confirm the efficacy of ceftriaxone in treating gonorrhoea due to both PPNG and non-PPNG strains.

Yours faithfully,  
 K A McLean\*  
 P E Munday\*  
 C A Ison†

\*Department of Genitourinary Medicine,  
 †Department of Medical Microbiology, St. Mary's Hospital, London W2 1PG.

TABLE II Increase in strains from January 1985 to May 1986

Period	Total gonococci	No (%) PPNG
January-June 1985	32	2 (6.3)
July-December 1985	38	12 (31.6)
January-May 1986	24	12 (50.0)

PPNG = penicillinase producing *Neisseria gonorrhoeae*.